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OCCURRENCE OF *LIGHTIELLA FLORIDANA* (CRUSTACEA: CEPHALOCARIDEA) FROM THE WEST COAST OF FLORIDA

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ABSTRACT—The occurrence of a Cephalocarida (*Lightiella floridana*) is reported from the nearshore zone of the Gulf of Mexico. It was previously reported from the protected waters of Anclote Anchorage, Florida, in *Thalassia* sp. beds. Specimens occurred in substrates that were hard, gray shelly sand, with the amount of silt and clay less than 1%. Sand-size particles averaged 74%. Total carbon and organic material averaged 6.5% and 22.3%, respectively.

The subclass Cephalocarida (Crustacea) was formed in 1955 (Sanders, 1955). This subclass contains three genera and eight species (Hessler and Sanders, 1973, and McLaughlin, 1976). The species are *Hutchinsoniella macracantha*, *Lightiella serendipita*, *L. monnitae*, *L. incisa*, *L. floridana*, *Sandersiella acuminata*, *S. calmani*, and *S. bathyalis*. The species *L. floridana* has been just recently described from Anclote Anchorage, Florida (McLaughlin, 1976). The zoogeographical distribution of the cephalocarids has been reported by Hessler and Sanders (1973). Cephalocarids occur in substrates that are bare or covered with seagrass, in intertidal as well as in deep sea habitats, and over a wide range of temperatures. The one common factor in these habitats has been the flocculent nature and high organic content of the surface sediments (Sanders, 1963).

Lightiella floridana has been only reported from Anclote Anchorage, located on the central west coast of Florida (McLaughlin, 1976). The habitat consisted of a fine quartz sediment, covered with organic matter and flocculent material. Specimens were collected by trawl in algal mats and more abundantly in benthic samples from the protected *Thalassia* sp. seagrass beds. The presence of *L. floridana* off the coast of Pinellas County, Florida, as reported herein, marks the second occurrence of a cephalocarid in the Gulf of Mexico. The habitat in the nearshore zone of the Gulf of Mexico differs considerably from the type-locality.

Benthic and sediment samples were collected in the nearshore zone off Pinellas County, Florida, during 1971 as part of a survey of the physical, chemical and biological characteristics of the nearshore zone of Sand Key, Florida, prior to beach restoration (Saloman, 1974). A plug sampler was used to collect 832 samples at 208 stations. The plug sample was 1/64 m^2 by 23 cm deep. The samples were sieved through a 0.701-mm mesh screen.

A total of 12 *L. floridana* was found at four of the 208 stations (Fig. 1). All speci-

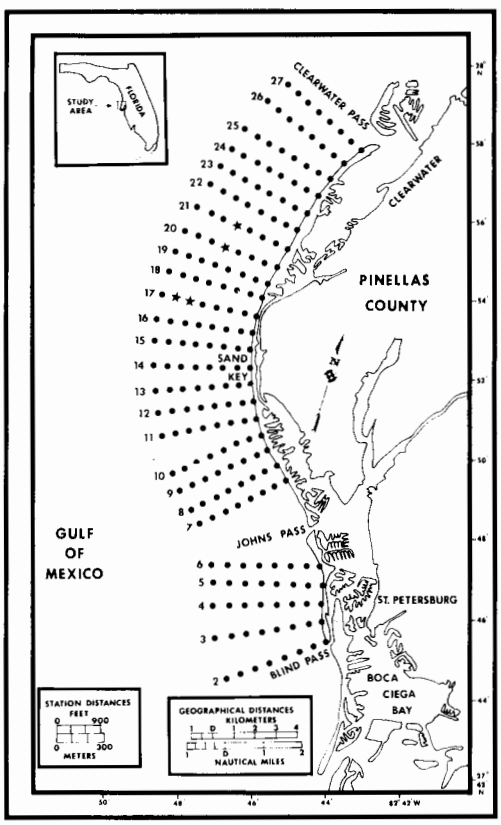

Figure 1. Sampling stations off Pinellas County, Florida. Stars indicate locations where *Lightiella floridana* was found.

Table 1. Sampling data and sedimentological factors at the four stations where *L. floridana* was found

Item	Stations			
	17-5	17-6	20-4	21-4
No. individuals	8	1	2	1
Date	4–26–71	4–26–71	4–29–71	5–28–71
Depth	15	17	19	19
Pebble and granule (%)	16.47	32.47	23.73	29.43
Sand (%)	83.31	67.33	75.72	69.66
Silt (%)	0.09	0.15	0.23	0.65
Clay (%)	0.13	0.05	0.32	0.26
Calcium carbonate (%)	45	79	53	64
Organic material (%)	18	22	22	27
Total carbon (%)	5.103	6.673	7.146	6.900
Organic carbon (%)	0.135	0.275	0.200	0.365
Kjeldahl nitrogen (%)	0.037	0.069	0.049	0.079
Carbon-nitrogen ratio	3.65	3.98	4.08	5.14
Mean-grain size (phi)	1.423	0.131	0.460	0.219
Standard deviation (phi)	1.875	1.868	1.727	1.886
Skewness	–0.648	0.163	–0.281	0.106
Kurtosis	0.780	0.721	0.757	0.733

mens appeared to be adults; two were ovigerous. The dates of capture were between April 26 and March 28, 1971.

The substrate in the sampling area varied considerably. There were areas of clean hard white sand, coarse shelly sand, very soft silty bottoms, as well as exposed limestone with coral and attached sponges. Depths of water ranged from 0 to 31 ft (0 to 9.4 m); most of the sampled area was between 10 and 20 ft (3.6 and 6.1 m). None of the areas contained attached seagrasses.

The substrate where *L. floridana* occurred was a hard, firm, gray shelly sand. The amount of silt and clay was less than 1%, and the sand-sized particles averaged 74%. The remaining portion of the sediment was composed of pebble-and-granule-sized particles. These were mainly composed of shell and shell fragments and accounted for the high percentage of calcium carbonate (Table 1). The levels of total carbon and organic material were relatively high. The average values at the four stations were 6.5% and 22.3%, respectively. The mean grain size averaged 0.559 phi, or about 0.67 mm, and was classified as coarse sand. Sediments were poorly sorted with an average standard deviation of 1.839 phi (Table 1).

The substrate differs considerably from that of the turtle grass beds reported by McLaughlin (1976). A closely related species, *L. incisa* was also found in turtle grass beds (Gooding, 1963, and Sanders and Hessler, 1964). Sanders and Hessler (1964) concluded from a study of the functional morphology of *H. macracantha* and *L. incisa*, that *L. incisa* is limited to sediments with an organic and flocculent-like surficial layer. This type of habitat is similar to that described by McLaughlin (1976) for *L. floridana*. Although sediments of this type were found in the sampling area off Pinellas County, Florida (seagrasses were not found), *L. floridana* was not found in them. Rather, it was found in hard shelly sand bottoms with less than 1% silt and clay. The only common factor of the sediments off Pinellas County, Florida, and of those described by Gooding (1963), Sanders and Hessler (1964), and McLaughlin (1976) was the high organic content. The substrates where the other species of cephalocarids have been found have been described

as generally organically rich mud (Hessler and Sanders, 1973).

Dr. Patsy A. McLaughlin (pers. comm.) noticed a variation between the specimens of *L. floridana* from Anclote Anchorage and those from the nearshore zone of the Gulf of Mexico. The caudal rami of the specimens from the Gulf of Mexico are shorter than the combined lengths of the last two segments and somewhat thickened, in contrast to specimens from Anclote Anchorage which had caudal rami that were long and relatively slender.

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